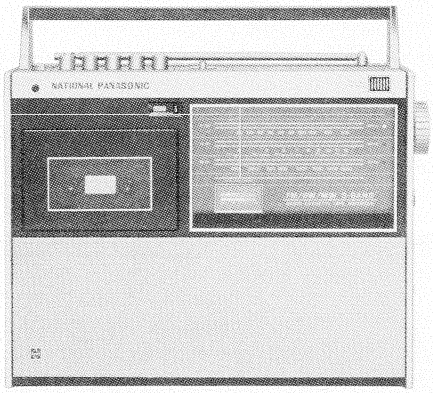
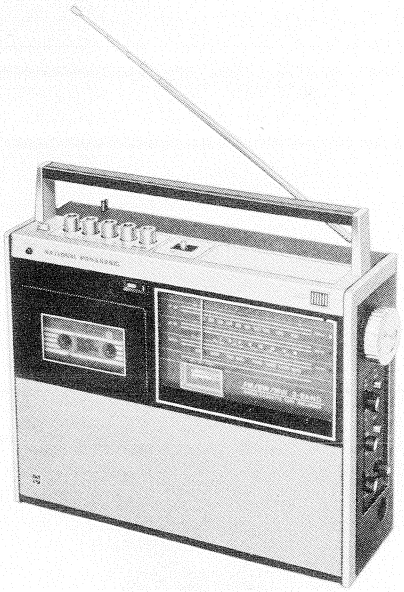
Service Manual

NATIONAL
TAPE RECORDER
PANASONIC

CASSETTE TAPE RECORDER WITH FM/MW/SW RADIO





RQ-237S MECHANISM SERIES

MODEL RQ-238FHS MODEL RQ-238FJS

SPECIFICATIONS

Power Source:	AC: 90~109, 110~125, 200~219, 220~250 volts; 50/60 Hz DC: 9 volts (six "C" type batteries), Car/boat battery (Using optional car/boat adaptor).
Power Consumption:	Approx. 6 W
Motor:	Electronic governor motor
Maximum Output:	3 W (RMS)
Transistors:	2SC921(1) 2SC920(4) 2SB324(1)
IC:	M5115P(1)
Diodes & Rectifier:	OA90Z(5) 2OA90(2) OA90ZA(1) RD6AL(1) 1S351(1) 1S1211(1) 1S1850(1) EYV320DIR2J3(1)
Track System:	2 track monaural
Recording System:	AC bias 35 kHz
Erasing System:	AC erase.
Tape Speed:	1-7/8 ips.
Fast Forward Time:	Approx. 90 seconds with C-60 cassette
Rewind Time:	Approx. 90 seconds with C-60 cassette
Frequency Response:	50~10,000 Hz
Inputs:	"MIC" 600Ω −74 dB "AUX IN" 100 kΩ −30 dB "DC IN" 9 V
Outputs:	"EXT SP" 8Ω "MPX OUT" 1.2 kΩ
Recording Time:	One hour (two-way, using C-60 tape)
Speaker:	4″ PM dynamic speaker
Dimension:	12-1/4″(W) × 11-5/8″(H) × 3-5/8″(D)
Weight:	9-1/4 lbs.

RADIO SECTION

FJS	
Frequency Range:	FM: 87.5~108 MHz MW: 525~1,605 kHz SW: 5.9~18 MHz
FHS	
Frequency Range:	FM: 87.5~108 MHz MW: 525~1,605 kHz SW: 3.9~12 MHz
Sensitivity:	FM: 1.5μV/50 mW MW: 100μV/m/50 mW SW: 10μV/50 mW

These specifications are subject to change in order to accommodate improvements in design.

MATSUSHITA ELECTRIC
MATSUSHITA ELECTRIC TRADING CO., LTD.
P. O. Box 288 Central, Osaka, Japan

ORDER NO. ARD-7201022

LOCATION OF PARTS

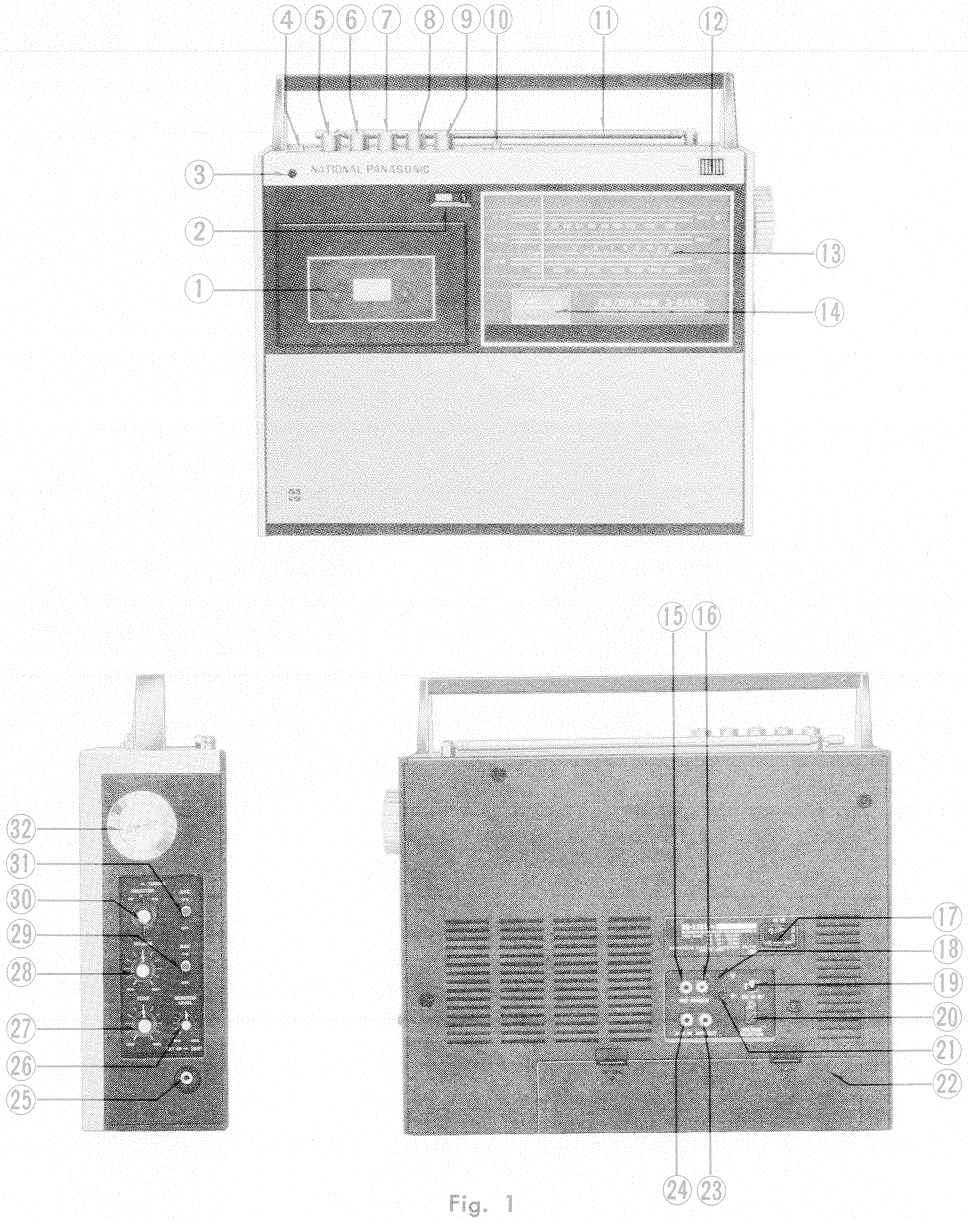


Fig. 1

① Cassette holder
② Tape counter
③ Dial light button
④ Eject button
⑤ Stop button
⑥ Playback button
⑦ Fast forward button
⑧ Rewind button
⑨ Record button
⑩ Radio/tape selector
⑪ Antenna
⑫ Built-in microphone
⑬ Dial scale
⑭ VU meter
⑮ Microphone jack
⑯ Remote jack
⑰ AC socket
⑱ External antenna jack
⑲ DC IN jack
⑳ AC voltage selector
㉑ Earth jack
㉒ Battery compartment
㉓ MPX OUT jack
㉔ Auxiliary input jack
㉕ External speaker jack
㉖ Monitor level control
㉗ Tone control
㉘ Volume control
㉙ Automatic gain control switch
㉚ Band selector
㉛ AFC switch
㉜ Tuning control

STANDARD VALUE TO TEST

ITEM	VALUE	PARTS TO BE ADJUSTED	REMARKS
Recording bias current	0.45 mA	VR3	Set the volume control to minimum.
Input level	MIC −74±4 dB AUX −30±4 dB	——	To obtain 50±10μA of recording current through the recording head. Set the volume control to maximum.
Bias oscillation frequency	35±5 kHz	——	——
Erase current	55±3 mA	——	——
Takeup tension	45±15 gr-cm	——	——
Pressure of pressure roller	400±50 gr	Pressure roller lever spring.	——

ALIGNMENT INSTRUCTIONS OF RADIO

THREADING DIAL CORD

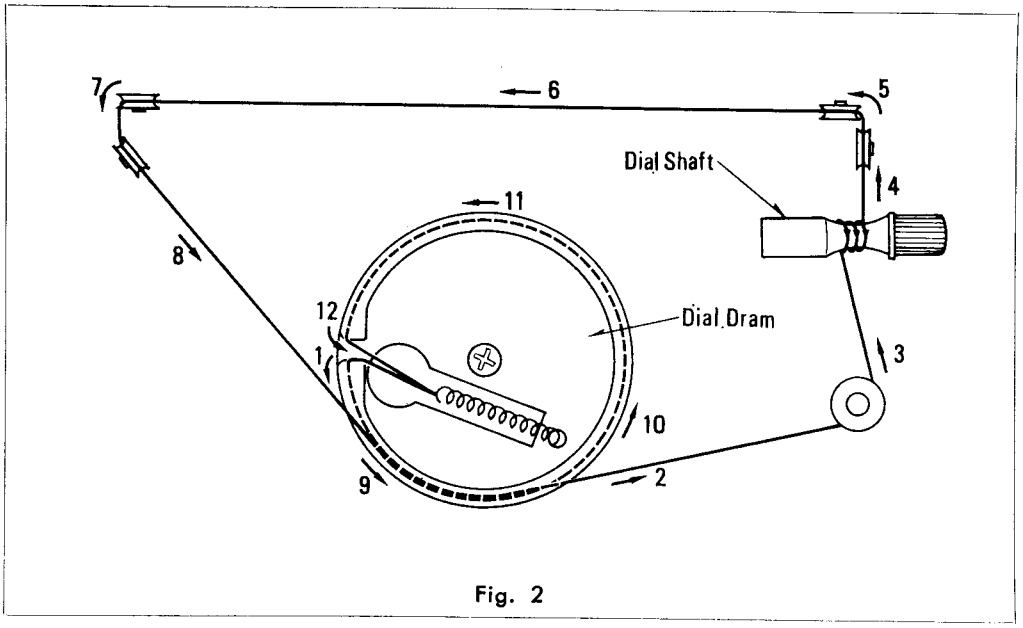


Fig. 2

MW IF & RF ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading.
Set volume control to Minimum. Set tone control to treble.
Set power source voltage to DC 9 volts. Set band selector switch to AM.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUSTMENT	REMARKS
1	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz (400 Hz Mod.)	Point of non-interference. (on/about 600 kHz)	Output meter across EXT SP jack.	T3 (1st IFT) T5 (2nd IFT) T8 (3rd IFT)	Adjust for maximum output.
2	Fashion loop of several turns of wire and radiate signal into loop of receiver.	550 kHz (400 Hz Mod.)	550 kHz	Output meter across EXT SP jack.	L10(OSC coil) L7 (ANT coil)	Adjust for maximum output by sliding coil (L7) along ferrite core.
3	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1500 kHz (400 Hz Mod.)	1500 kHz	Output meter across EXT SP jack.	TC5(OSC trimmer) TC3(ANT trimmer)	Adjust for maximum output. Repeat steps (2) and (3).

Nteo: 1. Cement antenna bobbin with wax after completing alignment.
2. Make certain that speaker system or dummy resistor (8Ω) is connected to the EXT SP jack when aligning.

SW RF ALIGNMENT FOR RQ-238FHS

Output of signal generator should be no higher than necessary to obtain an output reading.
Set volume control to maximum.
Set tone control to high.
Set band selector switch to SW.
Set power source voltage to DC 9 volts.

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
Fashion loop of several turns of wire and radiate signal into loop of receiver.	4 MHz 30% 400 Hz Mod.	4 MHz	Output meter across EXT SP jack.	L11 (OSC coil)	Adjust for maximum output.
Fashion loop of several turns of wire and radiate signal into loop of receiver.	12 MHz 30% 400 Hz Mod.	12 MHz	Tuning indicator	TC6 (OSC trimmer)	Adjust for maximum output.
Fashion loop of several turns of wire and radiate signal into loop of receiver.	12 MHz 30% 400 Hz Mod.	12 MHz	Tuning indicator	L8 (ANT coil)	Adjust for maximum output.

Note: Cement antenna bobbin with wax after completing alignment.

SW RF ALIGNMENT FOR RQ-238FJS

Output of signal generator should be no higher than necessary to obtain an output reading.
Set volume control to maximum.
Set tone control to high.
Set band selector switch to SW.
Set power source voltage to DC 9 volts.

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
Fashion loop of several turns of wire and radiate signal into loop of receiver.	6 MHz 30% 400 Hz Mod.	6 MHz	Output meter across EXT SP jack.	L11 (OSC coil)	Adjust for maximum output.
Fashion loop of several turns of wire and radiate signal into loop of receiver.	18 MHz 30% 400 Hz Mod.	18 MHz	Output meter across EXT SP jack.	TC6 (OSC trimmer)	Adjust for maximum output.
Fashion loop of several turns of wire and radiate signal into loop of receiver.	18 MHz 30% 400 Hz Mod.	18 MHz	Output meter across EXT SP jack.	L8 (ANT coil)	Adjust for maximum output.

Note: Cement antenna bobbin with wax after completing alignment.

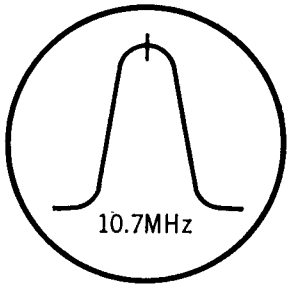


Fig. 3

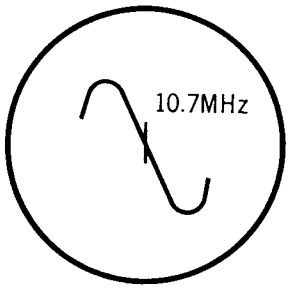


Fig. 4

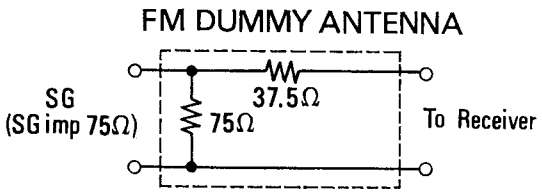


Fig. 5

FM IF & DETECTOR ALIGNMENT WITH OSCILLOSCOPE

EQUIPMENT REQUIRED

Signal generator that provides 10.7 MHz marker.
Sweep generator that provides 10.7 MHz center frequency and 400 kHz sweep width.

OSCILLOSCOPE

Set sweep selector of oscilloscope to "EXTERNAL SWEEP". Apply 60 Hz sweep signal from sweep generator to horizontal input terminal of oscilloscope.

Set band selector switch to FM.
Set volume control to minimum.
Set tone control to treble.
Set AFC switch to "OFF".
Maintain line voltage at DC 9 volts.

Note: Unsolder lead between test point TP2 and Point [A] before alignment and resolder it after alignment.

	SWEEP GENERATOR COUPLING	SIGNAL GENERATOR COUPLING	RADIO DIAL SETTING	INDICATOR	ADJUSTMENT	REMARKS
1	High side thru. .001μF to point TP1. Common to chassis.	High side thru. .001μF to point TP1. Common to chassis.	Point of non-interference (on/about 90 MHz).	Connect vert. amp. of scope to point TP2. Common to chassis.	T1 (FM 1st IFT) T2 (FM 2nd IFT) T4 (FM 3rd IFT) T6 (FM 4th IFT)	Adjust for maximum amplitude and proper linearity between ±100 kHz markers. (Refer to Fig. 3)
2	High side thru. .001μF to point TP1. Common to chassis.	High side thru. .001μF to point TP1. Common to chassis.	Point of non-interference (on/about 90 MHz).	Connect vert. amp. of scope to point TP3. Common to chassis.	T7 (FM 5th IFT)	Adjust T7 so that 10.7 MHz marker is at the center. (Refer to Fig. 4)

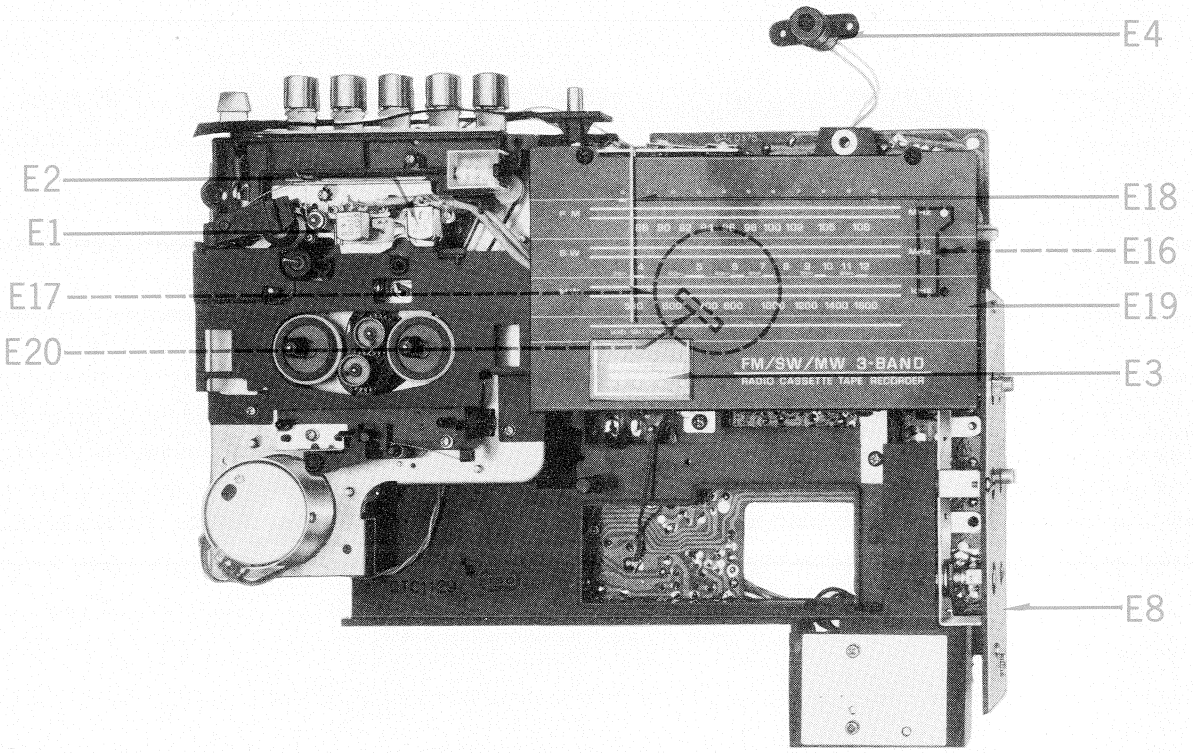
FM RF ALIGNMENT

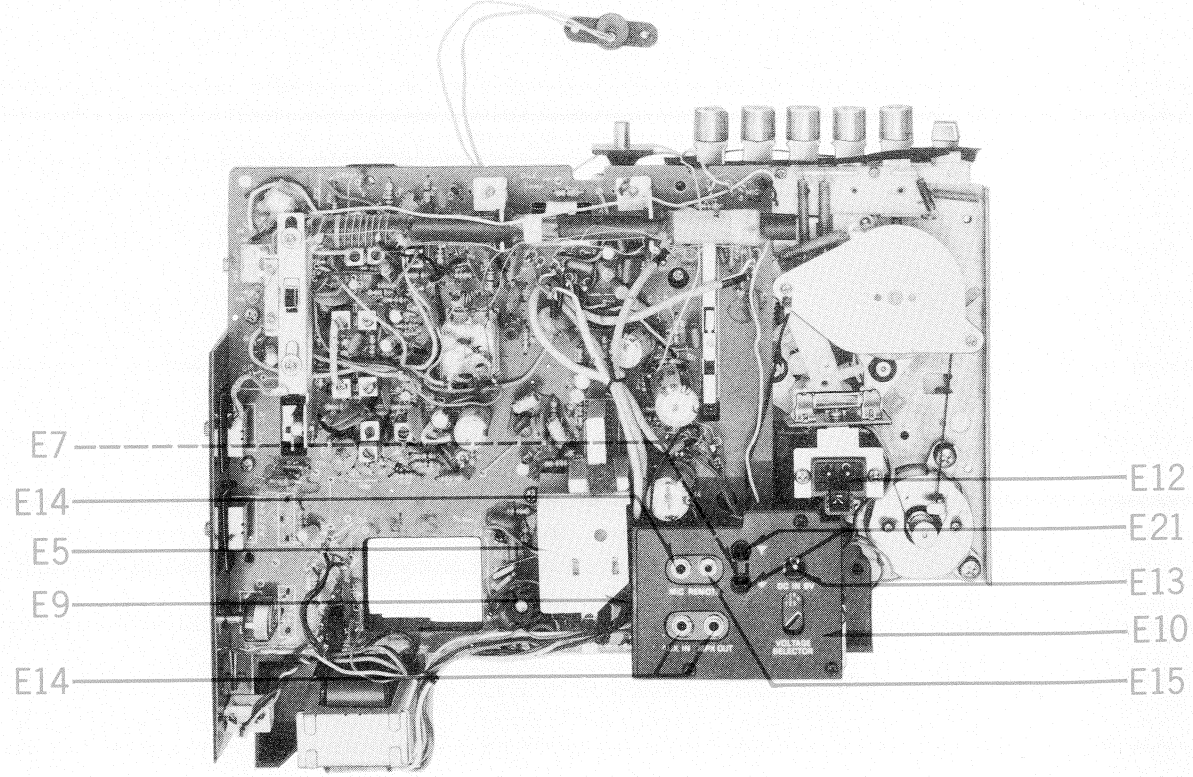
Output of signal generator should be no higher than necessary to obtain an output reading.
Set volume control to minimum.
Set band selector switch to FM.
Set tone control to center.
Set AFC switch to "OFF".
Set power source voltage to DC 9 volts.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUSTMENT	REMARKS
3	Connect to EXT FM antenna terminal through FM dummy antenna. Common to chassis. (Refer to fig. 5)	90 MHz (400 Hz Mod.)	90 MHz	Output meter across EXT SP jack.	L6 (FM OSC coil) L4 (FM collector coil)	Adjust for maximum output.
4	Connect to EXT FM antenna terminal through FM dummy antenna. Common to chassis. (Refer to fig. 5)	106 MHz (400 Hz Mod.)	106 MHz	Output meter across EXT SP jack.	TC1 (FM OSC trimmer) TC2 (FM collector trimmer)	Adjust for maximum output. Repeat steps (3) and (4).

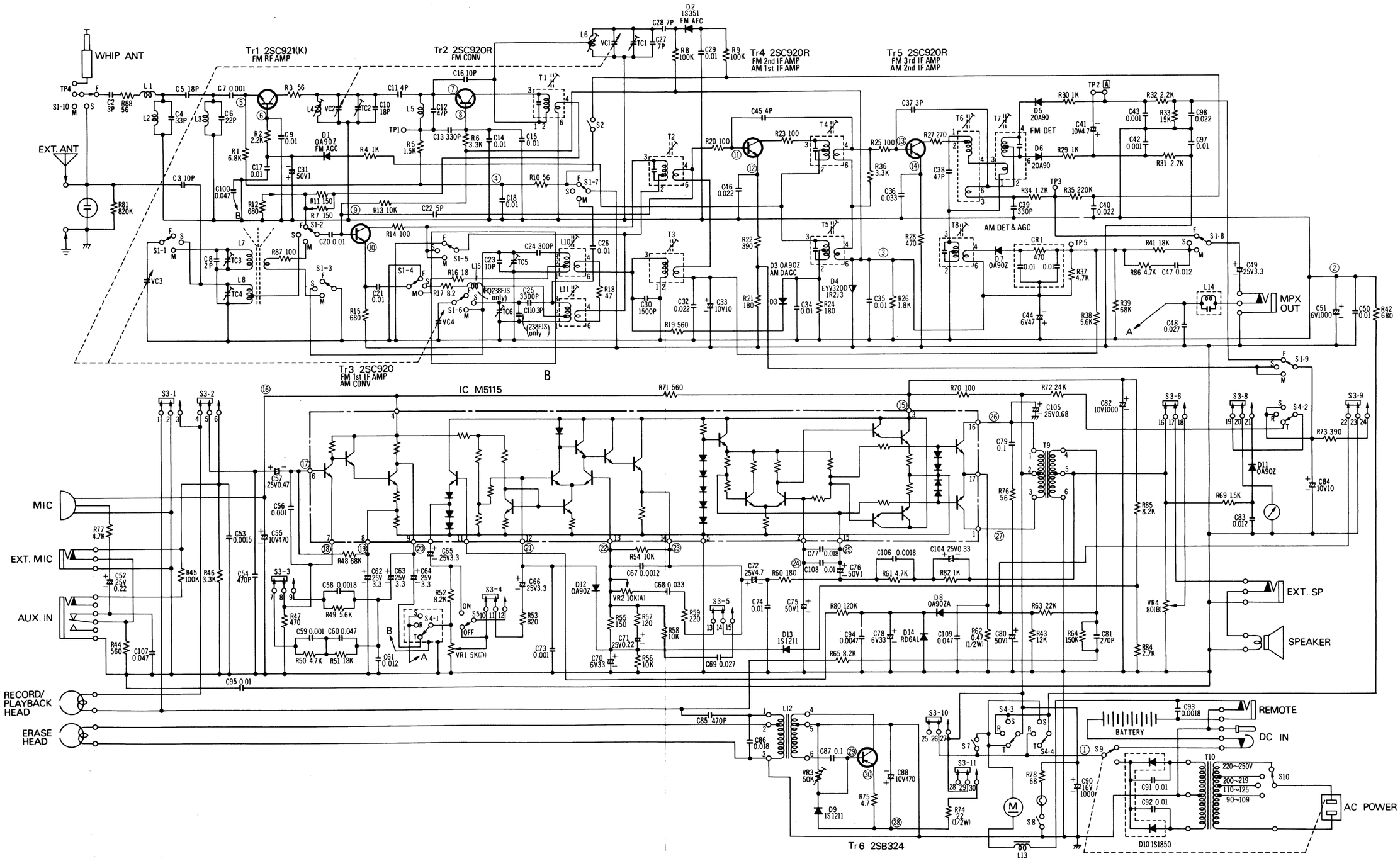
Note: Three output responses will be present, proper tuning is the center frequency.

ELECTRICAL PARTS LOCATION

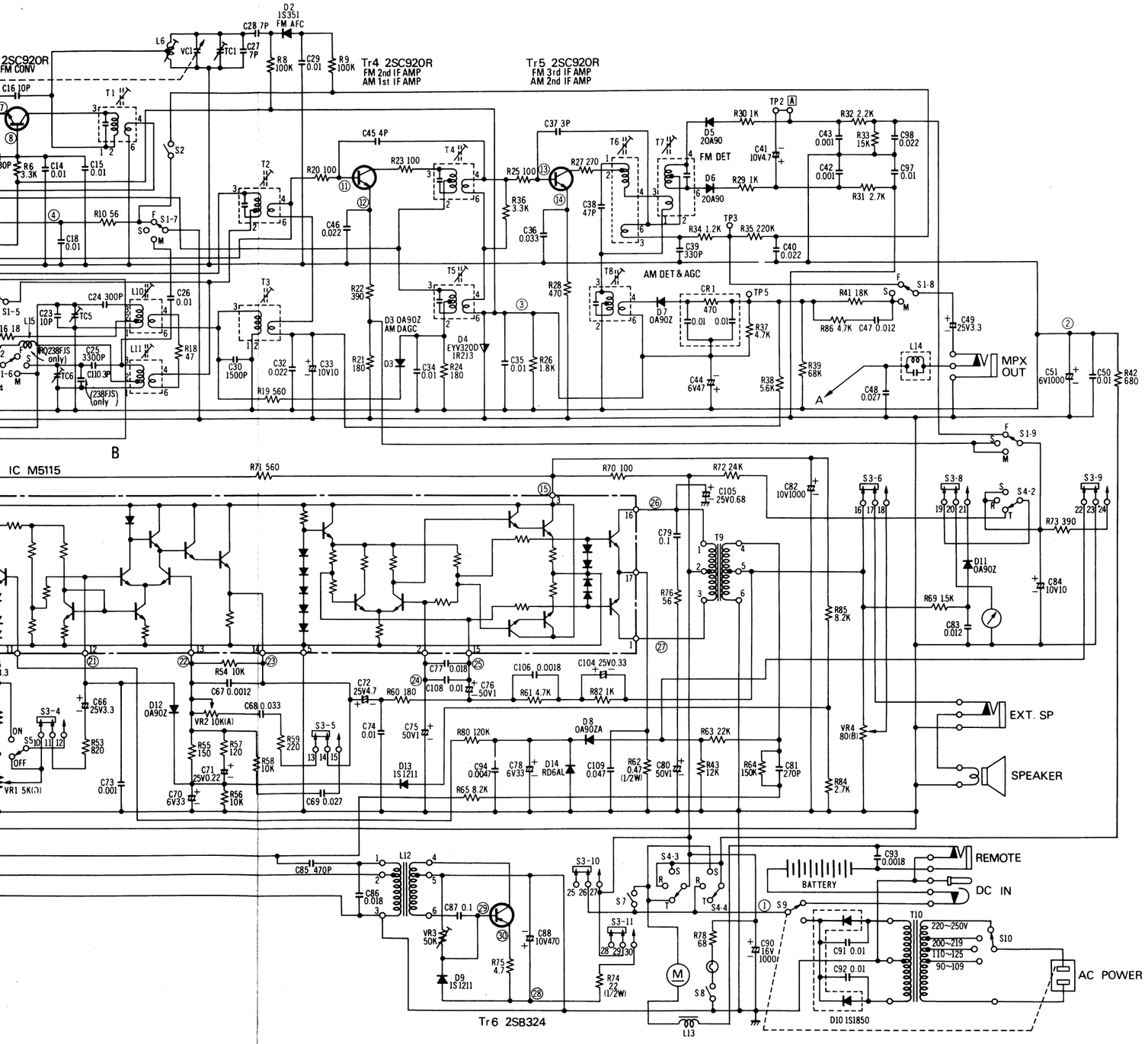




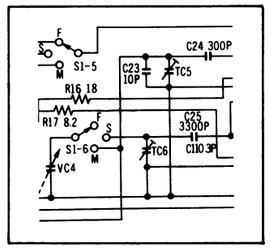
SCHEMATIC DIAGRAM MODEL RQ-238FHS(FJS)



. RQ-238FHS(FJS)

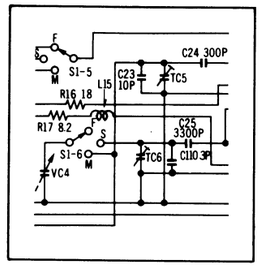


RQ-238FHS



B

RQ-238FJS



B

STANDARD VOLTAGE CHART

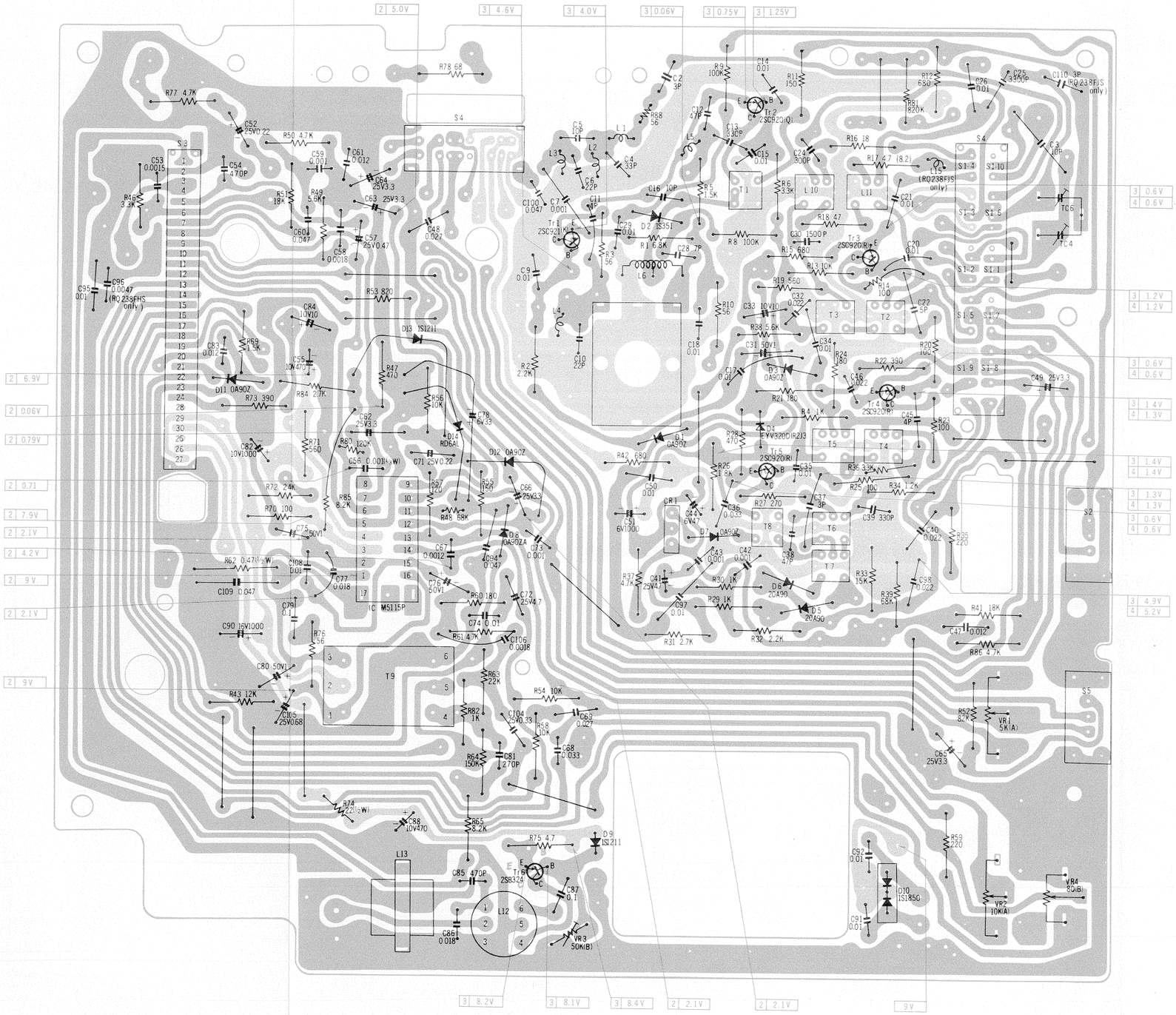
Check Point	Recording	Playback	FM	MW & SW	Check Point	Recording	Playback	FM	MW & SW
①	9 V	9 V	9 V	9 V	⑯		6.9 V		
②			4.5 V	5.2 V	⑰		0.71 V		
③			1.4 V	1.4 V	⑱		0.06 V		
④			0.06 V		⑲		0.79 V		
⑤			4.0 V		⑳		5.0 V		
⑥			4.6 V		㉑		2.1 V		
⑦			0.75 V		㉒		2.1 V		
⑧			1.25 V		㉓		4.2 V		
⑨			1.2 V	1.2 V	㉔		2.1 V		
⑩			0.6 V	0.6 V	㉕		2.1 V		
⑪			1.4 V	1.3 V	㉖		9 V		
⑫			0.6 V	0.6 V	㉗		9 V		
⑬			1.3 V	1.3 V	㉘			8.4 V	
⑭			0.6 V	0.6 V	㉙			8.1 V	
⑮		7.9 V			㉚			8.2 V	

NOTE: All measurements are under no signal condition with volume at minimum position. Use VTVM for voltage measurements.

NOTE:

1. S1-1～S1-9 ..... Band select switch (shown in FM position). F...FM, S...SW, M...MW.
2. S2 ..... Automatic frequency control switch (shown in ON position).
3. S3-1～S3-11 ... Record playback select switch (shown in playback position).
4. S4-1～S4-4 ..... Function switch (shown in tape position). T...TAPE, R...RADIO, S...SLEEP.
5. S5 ..... AGC switch (shown in OFF position).
6. S7 ..... Power switch.
7. S8 ..... Dial Indication switch.
8. S9 ..... AC DC select switch (shown in DC position).
9. S10..... AC voltage select switch.
10. VR1..... Volume control.
11. VR2..... Tone Control.
12. VR3..... Erase current adjustment VR.
13. VR4..... Monitor Level control.
14. Resistors are ohms (Ω), 1/4 watt unless specified otherwise. K=1,000Ω.
15. Capacitors are microfarad (μF) unless specified otherwise. P=Micro-microfarads.
16. Encircled numbers (○) show the checkpoints for voltage. The values are marked in the standard voltage chart.

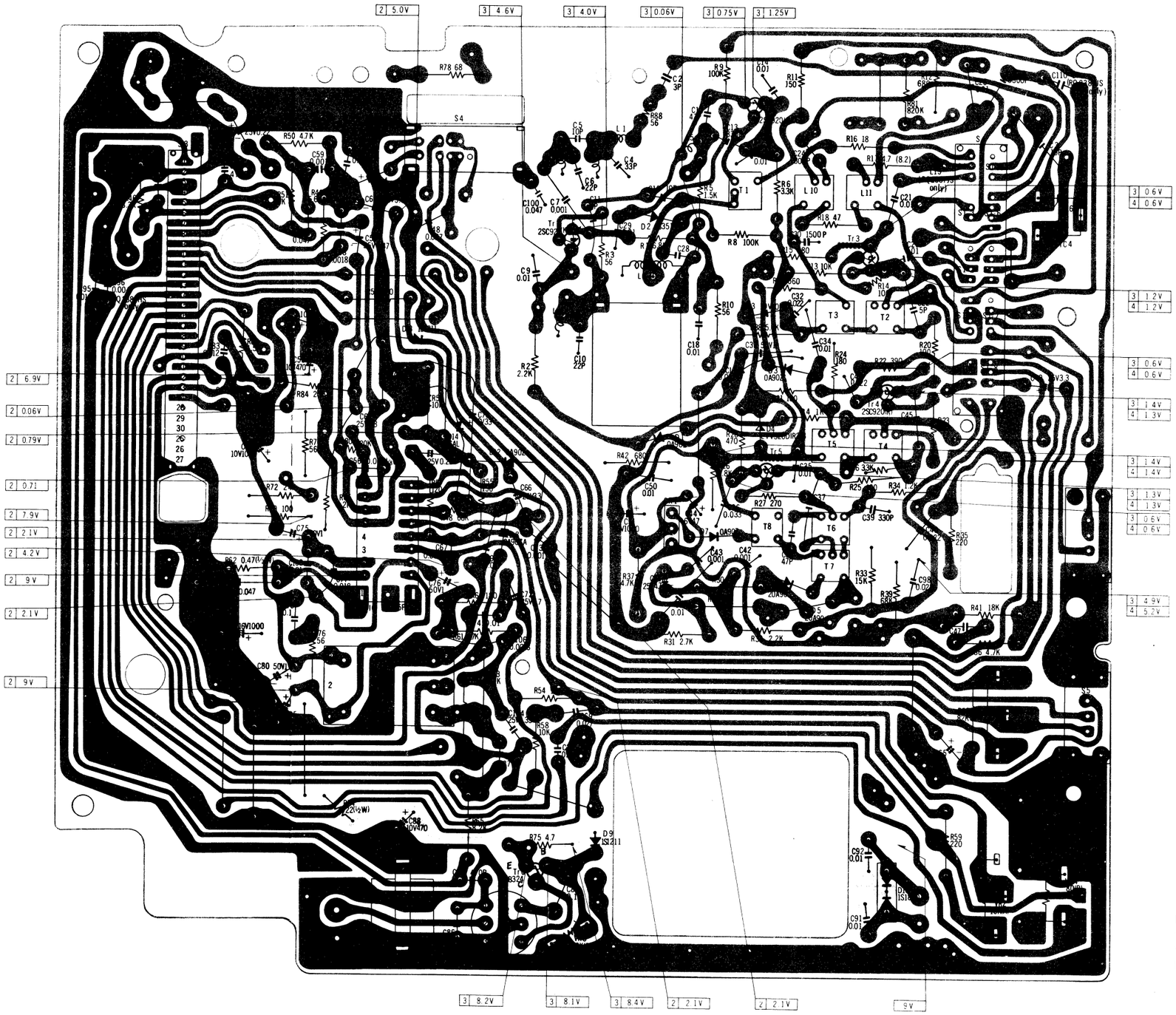
CIRCUIT BOARD



NOTE:

The circuit shown in green on the conductor is + B circuit.
Values indicated in ▭ are DC voltages between the chassis and electrical parts.
Numerals show values of voltage at ...
1...Recording, 2...Playback, 3...FM, and 4...MW & SW respectively.

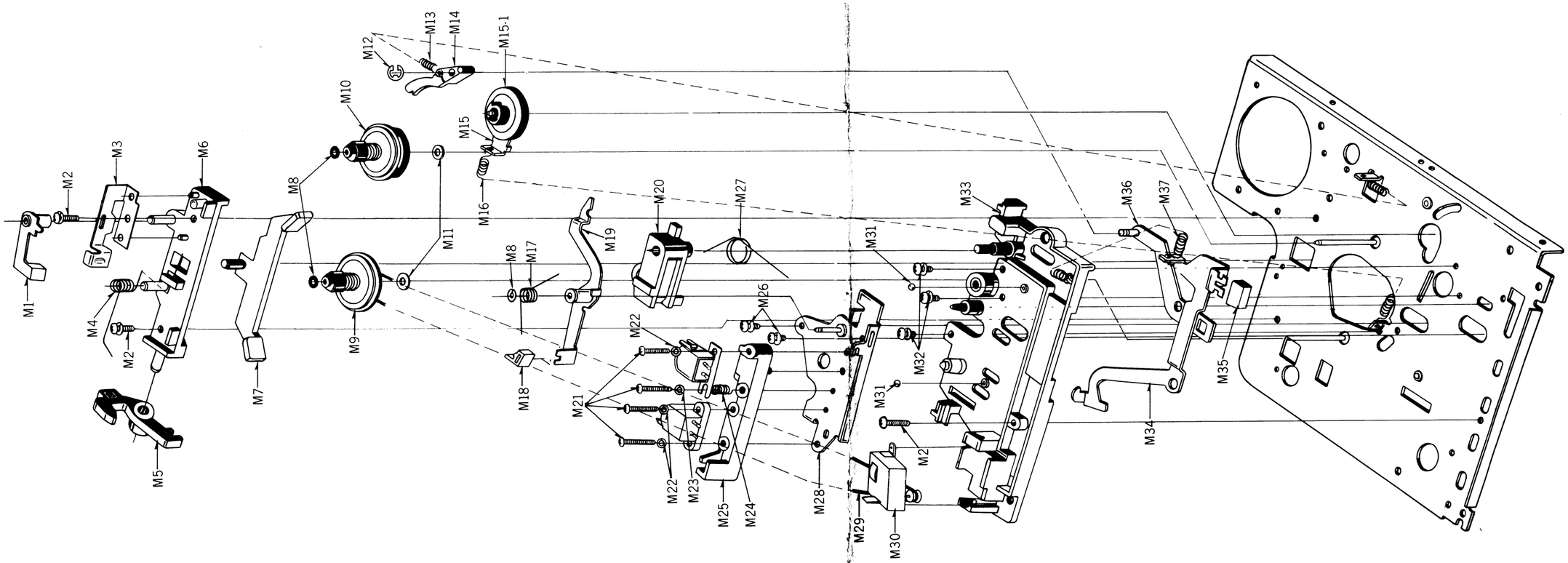
CIRCUIT BOARD

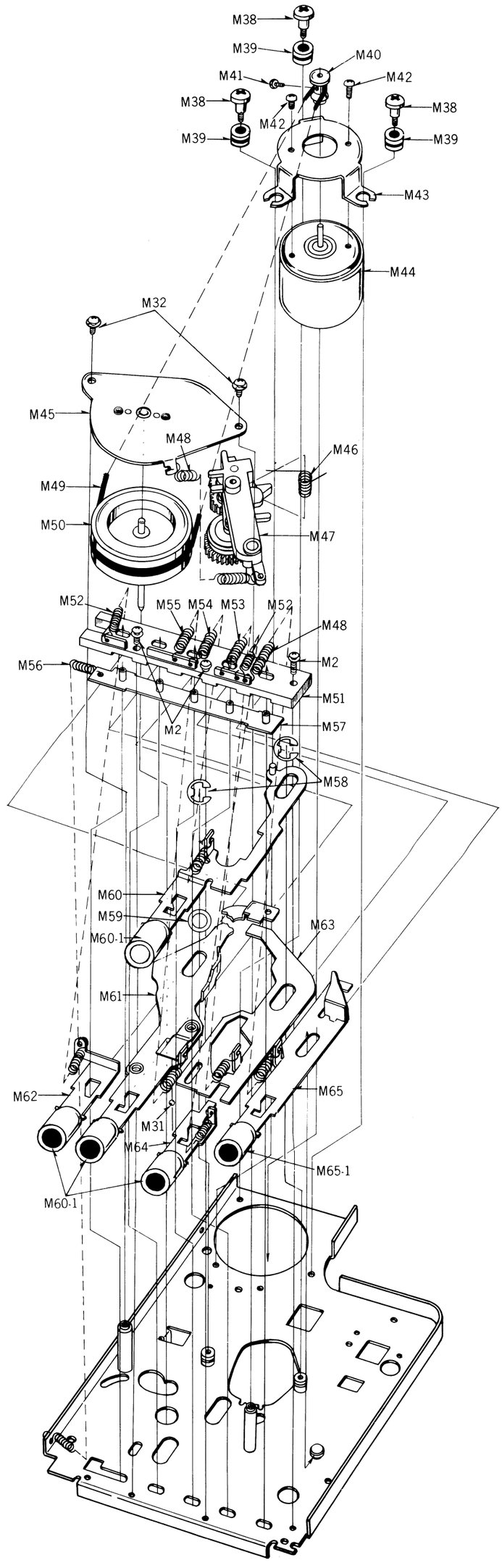


NOTE:

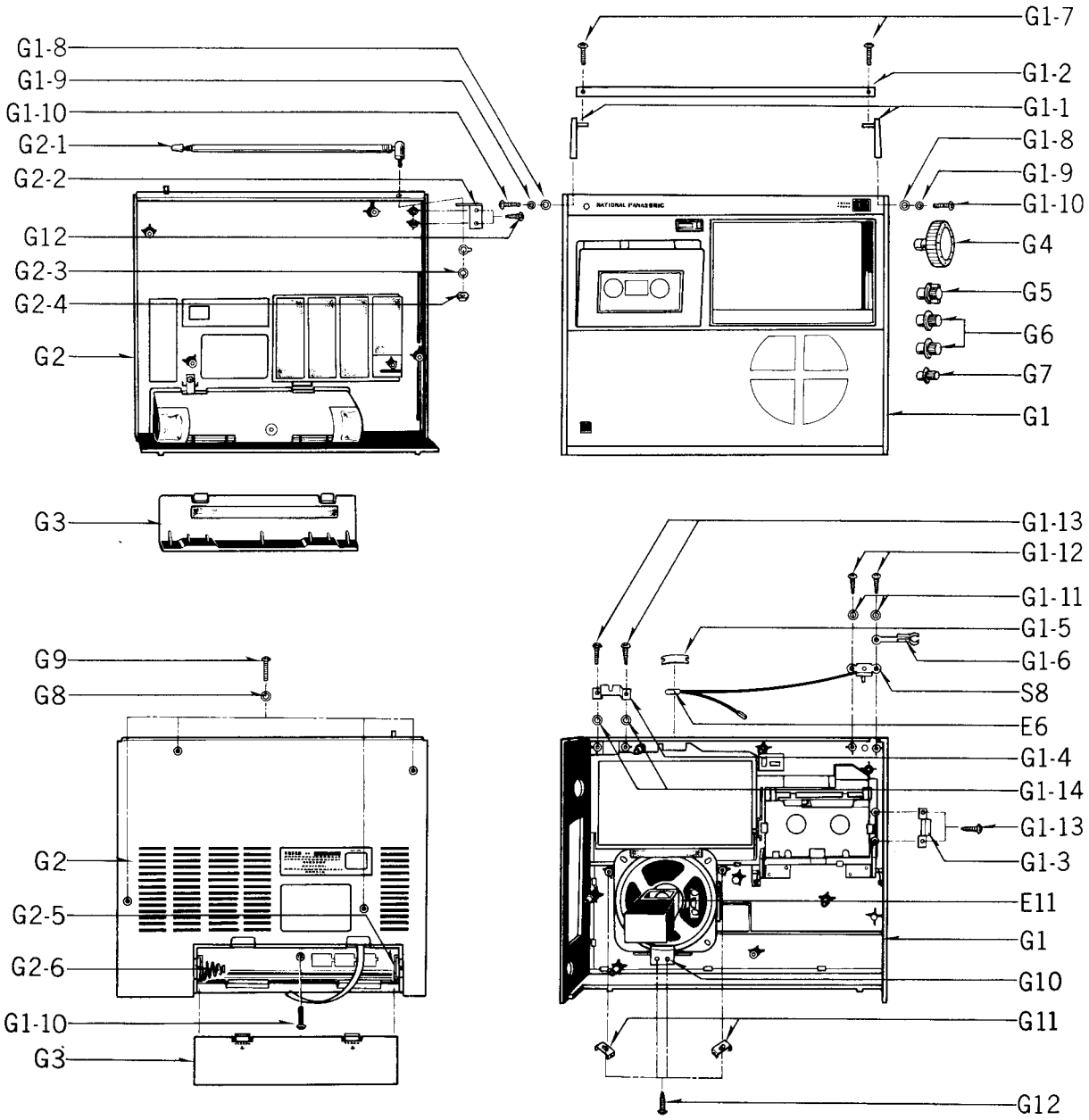
The circuit shown in green on the conductor is + B circuit.
Values indicated in ▭ are DC voltages between the chassis and electrical parts.
Numerals show values of voltage at ...
1...Recording, 2...Playback, 3...FM, and 4...MW & SW respectively.

EXPLODED VIEWS




M38
M39
M40
M41
M42
M38
M42
M38
M39
M39
M43
M44
M32
M45
M48
M46
M49
M50
M47
M52
M55
M54
M53
M52
M48
M56
M2
M51
M2
M57
M58
M60
M59
M60-1
M63
M61
M62
M65
M31
M64
M65-1
M60-1

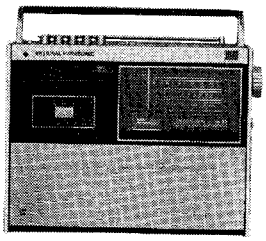
CABINET PARTS



REPLACEMENT PARTS LIST

MODEL RQ-238FHS (FJS)

NATIONAL PANASONIC



RQ-238FHS (FJS)

NOTE:

1. Be sure to make your orders of Replacement Parts according to this List.
2. "×" in "Rank" Column indicates that the part are not supplyable.
3. "**A**, **B** and **C**" in "Rank" Column indicates the recommended stock of replacement parts. Refer to the recommended stock table on last page.
4. "★" in "Remarks" Column indicates New Parts.
5. "ISO" in "Remarks" Column indicates ISO Screw or Nut.

NOTA:

1. Habrá que asegurarse que los pedidos de piezas de repuesto se hagan según esta lista
2. "×" marcado en la columna "Rank", quiere decir que dichas piezas no pueden ser provistas.
3. "**A**, **B** y **C**" marcadas en la columna "Rank" indican el surtido que se recomienda tener de dichas piezas de repuesto.
4. "★" marcado en la columna "Remarks", quiere decir que las piezas son nuevas.
5. "ISO" marcado en la columna "Remarks", quiere decir que es un tornillo o tuerca "ISO".

NOTE:

1. Bien s'assurer de se conformer à la liste suivante pour les commandes de pièces de rechange.
2. "×", dans la colonne "Rank", indique qu'il n'est pas possible de fournir ces pièces.
3. "**A**, **B** et **C**", dans la colonne "Rank", indiquent le stock recommandé de pièces de rechange. Se reporter en dernière page au tableau des stocks/recommandés.
4. "★", dans la colonne "Remarks", indique les pièces nouvelles.
5. "ISO", dans la colonne "Remarks", indique une vis ou un écrou ISO.

HINWEIS:

1. Bestellen Sie Ihre Ersatzteile genau nach dieser Liste.
2. Mit "×" in der "Rank" Spalte aufgeführte Teile können nicht geliefert werden.
3. "**A**, **B** und **C**" in der "Rank" Spalte zeigt Ihnen den Vorrat der Ersatzteile an.
4. "★" in der "Remarks" Spalte bedeutet "neue Teile".
5. "ISO" in der "Remarks" Spalte bedeutet ISO-Schraube oder Mutter.

按：

1. 關於代用零件之訂購，務請依照此表而行之爲荷。
2. 「等級」(Rank) 一欄中之 "×" 標記表示該零件無從供應。
3. 「等級」(Rank) 一欄中之 "**A**, **B**, **C**" 標記表示該零件有存貨，值得介紹。
   請參照最後一頁的「值得介紹存貨表」。
4. 「備考」(Remarks) 一欄中之 "★" 形符號標記表示該零件爲新出品。
5. 「備考」(Remarks) 一欄中之 "ISO" 符號標記表示國際標準化機構 (ISO) 式螺絲或螺母。

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
		MECHANICAL PARTS					
C	M1	Cassette Pressure Lever	QBJ1683A	1			RQ-237S
C	M2	Sems Screw ⊕2.6×10	XYN26+C10	1			COMMON
C	M3	Cassette Pressure Spring	QBP1302	1			RQ-237S
B	M4	Brake Spring	QBN1154	1			"
C	M5	Erase Safety Lever	QBJ1787	1			"
C	M6	Brake Guide	QBJ1653	1			RQ-237S
B	M7	Brake	QBJ1683	1			"
C	M8	Snap Washer	QWQ1124	3			"
A	M9	Supply Reel Table Assembly	QXP0320	1			"
A	M10	Takeup Reel Table Assembly	QXP0319	1			"
C	M11	Nylon Washer	QBJ3224	2			RQ-237S
C	M12	Stop Ring E2.9φ	XUC23FT	1			COMMON
C	M13	Auto Stop Driving Pawl Spring	QBT1489M	1			RQ-237S
C	M14	Auto Stop Driving Pawl	QBJ1656	1			"
A	M15	Takeup Idler Lever Assembly	QXL0441	1			"
×	M15-1	Takeup Idler	QXI0050	1			RQ-237S
B	M16	Idler Spring	QBT1488M	1			"
C	M17	Auto Stop Detect Lever Spring	QBN1156	1			"
B	M18	Auto Stop Detecting Piece	QBJ1538	1			RQ-222S,222AS 237S
C	M19	Auto Stop Detecting Lever Unit	QXLK0093	1			★
A	M20	Pressure Roller Lever Assembly	QXL0450	1			RQ-237S
C	M21	Screw ⊕2×12	XSN2+12	4			COMMON
C	M22	Spring Washer 2φ	XWA2BFK	3			"
C	M23	Flat Washer 2φ	XWG2BFK	1			"
B	M24	Head Spring	QBC1103	1			RQ-209S,219S, 221S,237S
C	M25	Head Spacer	QBJ1662	1			RQ-237S
C	M26	Sems Screw ⊕26×6	XYN26+E6	2			COMMON
C	M27	Pressure Roller Lever Spring	QBN1157	1			RQ-237S

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
×	M28	Head Base Plate Unit	QXKK0052	1			★
A	M29	Counter Belt	QDB0142	1			RQ-237S
A	M30	Tape Counter	QDC0044	1			RQ-237S
B	M31	Steel Ball 2.5φ	QDK1012	3			"
C	M32	Sems Screw ⊕26×6	XYN26+C6	5			COMMON
×	M33	Upper Base Plate Unit	QXKK0054	1			★
C	M34	Cassette up Lever	QML1959	1			RQ-237S
A	M35	Push Button-B (Eject)	QBJ1927	1			★
C	M36	Auto Stop Drive Lever Unit	QXLK0091	1			★
C	M37	Eject Spring	QBT1490	1			RQ-237S
B	M38	Motor Holding Screw	QMS1833	3			"
C	M39	Motor Cushion Rubber	QBG1055A	3			"
B	M40	Motor Pulley	QDP1378	1			RQ-237S
C	M41	Screw ⊕2×3	XSN2+3	1			COMMON
C	M42	Screw ⊕2.6×3	XSN26+3	2			"
×	M43	Motor Angle	QMA1681	1			"
A	M44	Motor	QDM0980	1			★
×	M45	Flywheel Retainer	QXH0095	1			RQ-237S
B	M46	Gear Spring	QBN1196	1			"
C	M47	Fast Forward Frame Assembly	QXL0451	1			"
B	M48	Record Lever Spring	QBT1486	2			"
A	M49	Flywheel Belt	QDB0141	1			"
A	M50	Flywheel	QXF0063	1			RQ-237S
C	M51	Lever Guide	QBJ1657	1			"
C	M52	Stop Lever Spring	QBT1482	2			"
C	M53	Fast Forward Lever Spring-2	QBT1485M	1			"
C	M54	Fast Forward Lever Spring-1	QBT1484M	1			"
C	M55	Playback Lever Spring	QBT1536M	1			RQ-237S
C	M56	Lock Plate Spring	QBT1487M	1			RQ-237S

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
×	M57	Lock Plate Assembly	QXHK0026	1			★
C	M58	Stop Ring E5φ	XUC5FK	2			COMMON
C	M59	Fiber Washer 6.2×11×1	QBK7130	1			RQ-237S
B	M60	Fast Forward Button Lever Assembly	QXLK0087	1			★
B	M60-1	Push Button-1 (Playback, FF, Rewind)	QXB0093	4			★
B	M61	Playback Button Lever Assembly	QXLK0085	1			★
B	M62	Stop Button Lever Assembly	QXLK0086	1			★
C	M63	Fast Forward Lever-2	QML2118	1			RQ-237S
B	M64	Rewind Button Lever Assembly	QXLK0088	1			★
B	M65	Record Button Lever Assembly	QXLK0089	1			★
B	M65-1	Push Button-2 (Record)	QXB0094	1			★
		RESISTORS					
B	R1	Carbon Resistor 6.8KΩ 1/4W	ERD14TJ682V	2			
B	R2, 32, 53	" 2.2KΩ 1/4W	ERD14TJ222V	3			
B	R3, 10, 76, 88	" 56Ω 1/4W	ERD14TJ560V	4			
B	R4, 29, 30, 40, 82	" 1KΩ 1/4W	ERD14TJ102V	5			
B	R5, 69	" 1.5KΩ 1/4W	ERD14TJ152V	2			
B	R6, 36, 46	Carbon Resistor 3.3KΩ 1/4W	ERD14TJ332V	3			
B	R7	" 150Ω 1/4W	ERD14VJ151	1			
B	R8, 9, 45	" 100KΩ 1/4W	ERD14TJ104V	3			
B	R11, 55	" 150Ω 1/4W	ERD14TJ151V	2			
B	R13, 54, 56, 58	" 10KΩ 1/4W	ERD14TJ103V	4			
B	R14, 20, 23, 25, 70, 87	Carbon Resistor 100Ω 1/4W	ERD14TJ101V	6			
B	R15, 42	" 680Ω 1/4W	ERD14TJ681V	2			
B	R16	" 18Ω 1/4W	ERD14TJ180V	1			
B	R17, 75	" 4.7Ω 1/4W	ERD14TJ4R7V	2			
B	(R17)	" 8.2Ω 1/4W	ERD14TJ8R2A	1			(RQ-238FJS only)
B	R18	Carbon Resistor 47Ω 1/4W	ERD14TJ470V	1			
B	R19, 44, 71	" 560Ω 1/4W	ERD14TJ561V	3			

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
B	R21, 24, 60	Carbon Resistor 180Ω 1/4 W	ERD14TJ181V	3			
B	R22, 73	" 390Ω 1/4 W	ERD14TJ391V	2			
B	R26	" 1.8KΩ 1/4 W	ERD14TJ182V	1			
B	R27	Carbon Resistor 270Ω 1/4 W	ERD14TJ271V	1			
B	R28, 47	" 470Ω 1/4 W	ERD14TJ471V	2			
B	R31, 84	" 2.7KΩ 1/4 W	ERD14TJ272V	2			
B	R33	" 15KΩ 1/4 W	ERD14TJ153V	1			
B	R34	" 1.2KΩ 1/4 W	ERD14TJ122V	1			
B	R35	Carbon Resistor 220KΩ 1/4 W	ERD14TJ224V	1			
B	R37, 50, 61, 77, 86	" 4.7KΩ 1/4 W	ERD14TJ472V	5			
B	R38, 49	" 5.6KΩ 1/4 W	ERD14TJ562V	2			
B	R39, 48	" 68KΩ 1/4 W	ERD14TJ683V	2			
B	R41, 43	" 12KΩ 1/4 W	ERD14TJ123V	1			
B	R51	Carbon Resistor 18KΩ 1/4 W	ERD14TJ183A	1			
B	R52, 65	" 8.2KΩ 1/4 W	ERD14TJ822A	2			
B	R53	" 820Ω 1/4 W	ERD14TJ821V	1			
B	R57	" 120Ω 1/4 W	ERD14TJ121A	1			
B	R59	" 220Ω 1/4 W	ERD14TJ221V	1			
B	R62	Wire-Wound Resistor 0.47Ω 1/2 W	ERM12PKR47	1			
B	R63	Carbon Resistor 22KΩ 1/4 W	ERD14TJ223A	1			
B	R64	" 150KΩ 1/4 W	ERD14TJ154A	1			
B	R72	" 24KΩ 1/4 W	ERD14TJ243V	1			
B	R74	Solid Resistor 22Ω 1/2 W	ERC12GM220	1			
B	R77	Carbon Resistor 100KΩ 1/4 W	ERD14TJ104	1			
B	R78	" 68 Ω 1/4 W	ERD14TJ680V	1			
B	R80	" 120KΩ 1/8 W	ERD18TJ124V	1			
B	R81	" 820Ω 1/4 W	ERD14TJ824V	1			
B	R85	" 8.2KΩ 1/4 W	ERD14TJ822V	1			
B	(R7, 12)	Carbon Resistor 150KΩ 1/4 W	ERD14TJ151V	2			(for Adjustment)

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
B	(R12)	Carbon Resistor 68Ω 1/4 W	ERD14TJ681V	1			(for Adjustment)
B	(R36)	" 10KΩ 1/4 W	ERD14TJ103V	1			(")
		VARIABLE RESISTORS					
A	VR1	Variable Resistor 5KΩ (D)	EVCS0AL20D53	1			RQ-237S
A	VR2	" 10KΩ (A)	EVCS0AL20A14	1			"
A	VR3	Semi-fixed Variable Resistor 50KΩ (B)	EVLT0AA00B54	1			RQ-237S RS-253S
A	VR4	Wire-Wound Variable Resistor 80Ω (B)	EVW68A600B81	1			★
		CAPACITORS					
C	C2, 37	Ceramic Capacitor 3 pF	ECCD1H030C	2			
C	C3, 16, 23	" 10 pF	ECKD1H100KC	3			
C	C4, 6	" 33 pF	ECCD1H330KC	2			
C	C5	" 18 pF	ECCD1H180KC	1			
C	C7, 42, 43	" 0.001μF	ECKE1H102P	3			
C	C8	Ceramic Capacitor 2 pF	ECKD1H020CC	1			
C	C9, 14, 15, 17,	18, 29, 34, 35, 50, 91, 92, 97, 98					
		" 0.01μF	ECKE1H103P	13			
C	C10	" 22 pF	ECKD1H220KC	1			
C	C11, 45	" 4 pF	ECCD1H040C	2			
C	C12, 38	Styrol Capacitor 47 pF	ECQS05470KH	2			
C	C13	Ceramic Capacitor 330 pF	ECCD1H331KC	1			
C	C20, 21, 26, 95	" 0.01μF	ECKE1H103MD	4			
C	C22	" 5 pF	ECKD1H050C	1			
C	C24	Styrol Capacitor 300 pF	ECQS1301JZ	1			
C	C25	" 3300 pF	ECQS1332KX	1			
C	C27, 28	Ceramic Capacitor 7 pF	ECKD1H070DC	2			
C	C30	Styrol Capacitor 1500 pF	ECQS1152KZ	1			
B	C31, 75, 76, 80	Electrolytic Capacitor 50 V 1μF	ECEA50V1L	4			
C	C32, 40, 98	Ceramic Capacitor 0.022μF	ECKE1H223P	3			
B	C33, 84	Electrolytic Capacitor 10 V 10μF	ECEA10V10L	2			

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
C	C36	Ceramic Capacitor 0.033μF	ECKE1H333P	1			
C	C39	" 330 pF	ECCD1H331K	1			
B	C41, 72	Electrolytic Capacitor 25 V 4.7μF	ECEB25V4R7L	2			
B	C44	" 6 v 47μF	ECEA6V47L	1			
C	C46	Mylar Capacitor 0.022μF	ECQM05223MZB	1			
C	C47, 61, 83	Mylar Capacitor 0.012μF	ECQM05123MZB	3			
C	C48, 60, 69	" 0.027μF	ECQM05273MZB	3			
B	C49, 62, 63, 64, 65, 66	Electrolytic Capacitor 25 V 3.3μF	ECEA25V3R3L	6			
B	C51	" 6 V 1000μF	ECEA6V1000L	1			
C	C52, 71	Aluminum Capacitor 25 V 0.22μF	ECAG25ER22M	2			
C	C53	Mylar Capacitor 0.0015μF	ECQM05152MZB	1			
C	C54, 85	Styrol Capacitor 370 PF	ECQS1471KZ	2			
B	C55, 88	Electrolytic Capacitor 10 V 470μF	ECEA10V470L	2			
C	C56	Ceramic Capacitor 0,001μF	ECKE1H102MD	1			
C	C57	Aluminum Capacitor 25 V 0,47μF	ECAG25ER47	1			
C	C58	Mylar Capacitor 0.0018μF	ECQM05182MZB	1			
C	C59, 73	" 0.001μF	ECQM05102MZB	2			
C	C67	" 0,0012μF	ECQM05122MZB	1			
C	C68	" 0.033μF	ECQM05333MZB	1			
B	C70, 78	Electrolytic Capacitor 6 V 33μF	ECEA6V33L	2			
C	C74	Mylar Capacitor 0.01μF	ECQM05103MZB	1			
C	C77, 86	" 0.018μF	ECQM05183MZB	2			
C	C79, 87	" 0.1μF	ECQM05104MZB	2			
C	C81	Styrol Capacitor 270 pF	ECQS1271KZ	1			
B	C82	Electrolytic Capacitor 10 V 1000μF	ECEA10V1000L	1			
B	C89	Electrolytic Capacitor 16 V 220μF	ECEA16V220L	1			
B	C90	" 16 V 1000μF	ECEA16V1000L	1			
C	C93, 106	Mylar Capacitor 0.0018μF	ECQM05182MZB	2			
C	C94, 100, 109	Ceramic Capacitor 0.047μF	ECKE1H473ZF	3			
C	C96	" 0.0047μF	ECKH1H472MD	1			(RQ-238FHS only)

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
C	C104	Aluminum Capacitor 25 V 0.33μF	ECAG25ER33M	1			
C	C105	" 25 V 0.68μF	ECAG25ER68M	1			
C	C107	Mylar Capacitor 0.047μF	ECQM05473MZB	1			
C	(C110)	Ceramic Capacitor 3 pF	ECCD1H030C	1			(RQ-238FJS only)
C	(C85)	Styrol Capacitor 220 pF	ECQS1221KZ	1			(for Adjustment)
		VARIABLE CAPACITORS					
B	VC1, 2, 3, 4	Variable Capacitor	PVC22J20T2L	1			★
B	TC1, 2, 3, 4, 5, 6	"	ECV2RW12W52Z	1			★
		COMBINATION PART					
B	CR1	CR Combination	EXAF203Z471	1			RQ-237S RS-253S
		TRANSISTORS					
A	Tr1	Transistor	2SC921(K)	1			RS-253S
A	Tr2, 3, 4, 5	"	2SC920(R)	4			RQ-237S
A	Tr6	"	2SB324	1			COMMON
		DIODES & RECTIFIER					
A	D1, 3, 7, 11, 12	Diode	OA90Z	5			RQ-237S
A	D2	" (AFC)	1S351	1			★
A	D4	" (Varistor)	EYV320DIR2J3	1			★
A	D5	"	20A90	2			COMMON
A	D8	"	OA90ZA	1			"
A	D9, 13	Diode	1S1211	1			RQ-235S, 237S
A	D10	Silicon Rectifier	1S1850	1			RQ-237S, 417S
A	D14	Zener Diode	RD6AL	1			RQ-234S
		INTEGRATED PART					
A	IC	Integrated Circuit	M5115P	1			RQ-237S
		TRANSFORMERS					
A	T1	IFT 1 (FM)	RLI4B152	1			RQ-237S RS-253S, 267S
A	T2, 5	IFT 2, IFT 5 (FM)	RLI4B351	2			RQ-237S, 435S

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
A	T3	IFT 3 (SW, MW)	RLI2B152	1			RQ-237S RS-253S, 280S
A	T4	IFT 4 (SW, MW)	RLI2B257	1			RQ-237S RS-267S
A	T6	IFT 6 (FM)	RLI4B551	1			"
A	T7	IFT 7 (FM)	RLI4B552	1			RQ-237S RS-267S
A	T8	IFT 8 (SW, MW)	RLI2B450M	1			★
A	T9	Output Transformer	QLA0373	1			RQ-237S
A	T10	Power Transformer	QLP0616	1			★
		COILS					
B	L1, 5	RF Coil	RLQY75S5	2			RQ-237S RS-267S
B	L2, 3	"	RLQY10S5	2			RS-267S
B	L4	FM Corrector Coil	RLD4Y45	1			★
B	L6	FM Oscillator Coil	RLD4Y53	1			★
B	L7, 8	SW, MW Antenna Coil	ELR18B5125	1			★ (RQ-238FHS only)
B	(L7, 8)	SW, MW Antenna Coil	ELR18B5131	(1)			★ (RQ-238FJS only)
B	L10	MW Oscillator Coil	RLO2B59M	1			★
B	L11	SW Oscillator Coil	RLO3B11M	1			★ (RQ-238FHS only)
B	(L11)	SW Oscillator Coil	RLO3B18M	(1)			★ (RQ-238FJS only)
A	L12	Oscillator Coil	QLB0145	1			RQ-237S RS-253S
A	L13	Choke Coil	QLP0122	1			RQ-237S
B	L14	19 kHz Filter Coil	QLH2013	1			RS-282S
B	(L15)	RF Coil	RLQY15S5	1			RQ-237S (RQ-238FJS only)
		SWITCHES					
A	S1	Slide Switch (Band Selector)	QSS1141	1			★
A	S2	Slide Switch (AFC)	QSS1140	1			★
A	S3	Slide Switch (Record/Playback Selector)	QSS1142	1			★
A	S4	Slide Switch (Tape Radio Selector)	QSS1115	1			RQ-237S
A	S5	Slide Switch (AGC)	QSS1140	1			★
A	S7	Leaf Switch (Power ON/OFF)	QSB0170A	1			RQ-237S RS-2571S
A	S8	Dial Light Switch	RSH1	1			★

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
A	S9	AC/DC Select Switch (Built-in AC Socket)		(1)			
A	S10	Rotary Switch (AC Voltage Selector)	QSR0005	1			RQ-221S, 226S, 229S, 417S
		ELECTRICAL PARTS					
A	E1	Record/Playback Head	QWY0107Z	1			RQ-221S, 237S
A	E2	Erase Head	QWY2107	1			★
A	E3	VU Meter	QSL1005	1			★
A	E4	Built-in Microphone	WM089BZ	1			★
C	E5	Integrated Circuit Assembly (With IC)	QEEK0036	1			★
A	E6	Dial Lamp	XAM37T200	1			★
A	E7	Neon Lamp	XAN3K	1			RQ-235S
C	E8	Side Jack Board	QGJ1194	1			★
C	E9	Jack Board	QGJ1202	1			★
C	E10	Jack Indication Board	QGK2029	1			★
A	E11	Speaker	EAS10P75SB	1			RQ-237S
B	E12	AC Socket	QJS0316S	1			★ iso
B	E13	DC Jack	QJA0207A	1			COMMON
B	E14	M3 Jack	QJA0115	3			"
B	E15	M2 Jack	QJA0118	1			RQ-229S RS-267S
C	E16	Band Indication Board	QTT2157	1			★
C	E17	Dial Indicator	QKT1589	1			★
C	E18	Dial Drum	QTQ0014	1			★
C	E19	Dial Scale	QGK2133	1			★ (RQ-238FHS only)
C	(E19)	"	QGK2124	1			★ (RQ-238FJS only)
C	E20	Dial Spring	QBT1420	1			RQ-235S
C	E21	Bush	QBJ1469	2			"
		CABINET PARTS					
B	G1	Body Case Assembly	QYBK0061	1			★
C	G1-1	Handle	QKH1066S	2			★ iso
C	G1-2	Handle Cover	QBJ1096	1			★

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
C	G1-3	Cassette Lid Stopper	QKT1498	1			RQ-237S
C	G1-4	Microphone Holding Plate	QKT1569	1			★
C	G1-5	Lamp Holding Spring	QBP1388	1			★
C	G1-6	Terminal	QJTK1003	1			★
C	G1-7	Screw ⊕PH3×10	XSN3+10	2			COMMON
C	G1-8	Washer W 3φ	XWG3	2			"
C	G1-9	" SW 3φ	XWA3B	2			"
C	G1-10	Screw ⊕PH3×8	XSN3+8S	3			COMMON ISO
C	G1-11	Washer SW 2φ	XWA2B	2			"
C	G1-12	Tapping Screw ⊕3×8	XTN3+8	6			"
C	G1-13	" ⊕3×6	XTN3+6	4			"
C	G1-14	Fiber Washer 4.2×9×1t	QBK3745	2			★
B	G2	Bottom Case Assembly	QYCK0045	1			★
B	G2-1	Rod Antenna	XEAQCT223EAS	1			★ ISO
C	G2-2	Antenna Holding Metal	QKT1619	1			★
C	G2-3	Washer SW 5φ	XWA5B	1			COMMON
C	G2-4	Nut N 5φ	XNG5ES	1			" ISO
C	G2-5	Battery Terminal	QJB0042	2			RQ-235S
C	G2-6	Battery Spring	QJB0016	2			"
B	G3	Battery Cover Assembly	QYFK0018	1			★
B	G4	Tuning Knob Assembly	QYTK0010	1			★
B	G5	Selector Knob Assembly	QYTK0013	1			★
A	G6	Volume Knob Assembly	QYTK0012	2			★
B	G7	Lever Control Knob Assembly	QYTK0011	1			★
C	G8	Washer	XWG3	4			COMMON
C	G9	Screw ⊕PH3×30	XSN3+30FZS	4			" ISO
C	G10	Speaker Holding Metal-A	QKT1376	1			★
C	G11	Speaker Holding Metal-B	QKT1172	2			★
C	G12	Tapping Screw ⊕3×8	XTN3+8	6			COMMON

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
		ACCESSORIES					
A	A1	Cassette Tape (Demonstration)	QFT1SCCNARZ	1			★
A	A2	Earphone	EAE2SB1	1			COMMON
B	A3	AC Cord	QFC1065	1			★
A	A4	Plug Adaptor	QJP0603S	1			COMMON (ISO)
B	A5	Instruction BooK	QQT1671	1			★
		PACKINGS					
C	P1	Inside Carton	QPNK0044	1			★(RQ-238FHS only)
C	P2	Inner Cushion-A	QPN2529	1			★
C	P3	Inner Cushion-B	QPN2530	1			★
C	P4	Dust Cover	XZB40×50A05	1			COMMON
C	P5	Accessory Box	QPW1129	1			RQ-208S RS-254S
C	(P1)	Inside Carton	QPNK0045	(1)			★(RQ-238FJS only)

RECOMMENDED STOCK OF REPLACEMENT PARTS

Rank of Part	Estimated Selling Q'ty of Tape Recorder Set					
	Less than 50	100	300	500	1,000	2,000
A rank Parts	2	5	15	20	40	80
B rank Parts	1	2	5	10	20	40
C rank Parts	0	1	3	5	10	20

Printed in Japan